

**What is claimed is:**

1           1. A method of integrating wired and wireless packet/cell transmission networks  
2 with an ATM network, comprising the steps of:

3           connecting an intermediate ATM network with access stations of a wired/wireless  
4 large area networks, including steps of:

5           establishing signaling and information communication between a server node in  
6 the large area network and a gateway connected to the ATM network;

7           transmitting the signaling and information communication from the large area  
8 network to a gateway connected to one switch of the ATM at the gateway converting all  
9 information into a cell format for communication to a switch of the ATM network;

10          providing the ATM network processes to allow services and signaling to traverse  
11 the ATM network from the entry gateway to a terminating point node of the ATM  
12 network;

13          at the terminating point converting all information to a format suitable for the  
14 receiving station or network.

1           2. The method of claim 1 including further steps of:

2           providing a mobility server platform connected to the ATM network which  
3 accepts requests from a mobile station and directs such requests to various control  
4 elements of a communication network connected to varied wireless base stations.

1           3. The method of claim 1 including further steps of:

2           providing a protocol conversion process for converting network packets into  
3 ATM cells.

1           4. The method of claim including further steps of:

2           sending an attach request message from a mobile station (MS) to a SGSN to  
3 initiate mobile station service.

1           5. The method of claim 4 including further steps of:

2           returning an acceptance message from the SGSN to the MS to confirm mobile  
3 service.

1           6. The method of claim 5 including further steps of:

2 initiating a disconnect with a request from the MS directed to the SGSN.

1 7. The method of claim 6 including further steps of:

2 completing a disconnect with an acceptance from the SGSN to the MS.

1 8. The method of claim 4 including further steps of:

2 updating a MS location by an inquiry addressed to a home location register

3 (HLR).

1 9. The method of claim 6 including further steps of:

2 initiating a disconnect includes a PDP context request addressed to a GSNN.

1 10. A communication network in which wireless and wired networks are  
2 integrated into an interacting unified entire network for providing end-to-end transport of  
3 voice, data and multimedia in packet and cell format, comprising:

4 the unified entire network including;

5 a first communication network including at least one of wireless, wired, and IP  
6 service;

7 an ATM network having one of its switch/routing nodes connected to the first  
8 communication network by a gateway functioning to convert information of the first  
9 network to an ATM cell format;

10 a mobility server platform (MSP) connected to a ATM switch/routing node and  
11 functioning to provide call and routing services from the gateway to terminating ATM  
12 switching /routing nodes; and

13 terminal interfaces connecting ATM switch/routing nodes to wireless base  
14 stations and including protocol conversion to convert ATM cells to wireless protocol.

1 11. The communication network as claimed in claim 10, comprising:

2 the gateway connecting the ATM network to the first communication network  
3 including, a protocol conversion for converting frame relay packet format to ATM cell  
4 format.

1 12. The communication network as claimed in claim 11, comprising:

2 the gateway providing information fragmentation/defragmentation in transfer of  
3 information through the gateway.

1 13. The communication network as claimed in claim 11, comprising:

an interworking function (IWF) connected for converting signaling and service protocols into a form suitable for integrating these services into the ATM network.

14. The communication network as claimed in claim 10, comprising:  
the mobility service platform (MSP) being further connected for interacting with network connected to a home location register.

15. The communication network as claimed in claim 14, comprising:  
the mobility service platform (MSP) being co-located with the GAGW.

16. The communication network as claimed in claim 10, comprising:  
a GPRS backbone IP network connected to the GAGW by a SGSN.

17. The communication network as claimed in claim 10, comprising:  
a MSC connected to the ATM network by an IWF.

18. The communication network as claimed in claim 10, comprising:  
a base station being connected to the ATM network by an IWF.

19. The communication network as claimed in claim 16, comprising:  
a public data network connected to the GPRS backbone IP network by a GGSN.

20. In a communication network for providing voice, data and multimedia service,  
a method of integrating various wireless systems through an inner core ATM network,  
comprising the steps of:

coupling a plurality of base stations of multiple wireless systems via wired network interconnections, the coupling of wired network interconnections including:  
integrating an ATM network with other networks through a gateway connected to an ATM switch/router device,

providing through the gateway switched/routed connections to various end terminations of an external network;

switching/routing calls and services received from the external network through the ATM network by controls supplied to switches/routers by a mobility server platform (MSP) connected to the ATM network; and

connecting wireless stations to switching/router nodes of the ATM network by protocol conversion of signaling to that of the wireless stations.

21. The communication network of claim 20, comprising:

2 the gateway connecting a GPRS backbone IP network to an ATM backbone  
3 network at an ATM switch/router.

1 22. The communication network of claim 21, comprising:

2 the MSP connected to at least one ATM switch /router for controlling call and  
3 services routing from the GPRS to the BSs through out the ATM network.

1 23. The communication network of claim 22, comprising:

2 connecting base stations to the communication network through interworking  
3 functions (IWF) for converting service protocols to achieve network integration.